



SEASIDE ALDER NAMED "'SEPTEMBER SUN'"

~~Background of the Invention~~

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] None.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] Development of this technology was federally funded under the following USDA/CSREES grants: 98-CRHF-0-6019; 99-CRHF-0-6019; 00-CRHF-0-6019; 2001-31100-06019; 2002-31100-06019; 2003-31100-06019.

BOTANICAL DESIGNATION

[0003] *Alnus maritima*, subspecies *oklahomensis*. Variety Denomination: 'September Sun.'

BACKGROUND

~~[0004] Field of the Invention~~

[0005] The present invention relates to the field of ornamental plants.

~~[0006] Background of the Invention~~

[0007] The present invention is a new and distinct variety of *Alnus maritima*, commonly known as "Seaside Alder," that is grown and utilized as an ornamental landscape tree or shrub. The new variety is known botanically as *Alnus maritima* subsp. *oklahomensis* and will be referred to hereinafter by the variety name, 'September Sun.'

[0008] Plants of *Alnus maritima* are native to North America, and plants of subspecies *oklahomensis* specifically are native only to Oklahoma. The species is valued ornamentally for its dark green foliage, its bright-yellow, pendulous catkins that bloom in autumn, and its healthy appearance under conditions known to be stressful for other woody taxa. Subspecies *oklahomensis* is the most distinct of the three subspecies of *Alnus maritima* and represents the best of the species' ornamental and physiological traits. Efforts to develop superior cultivated varieties of subsp. *oklahomensis* began only recently in 1998.

[0009] Germplasm for 'September Sun' was obtained as seed from an open-pollinated parent growing naturally near Tishomingo, Oklahoma. The inventors selected 'September Sun' as a single whole plant from a large seedling trial at Reiman Gardens on the campus of

Iowa State University, Ames, Iowa in 2000. The inventors selected and confirmed 'September Sun' to be unique within subsp. *oklahomensis* for its faster growth, denser foliage, more symmetrical growth habit, and smaller, more slender infructescences shown in field trials with over 1000 plants. The vertical growth rate of 'September Sun' was shown to be approximately 73% greater than the mean for other genotypes of subsp. *oklahomensis*, and its volume growth rate greater than the mean. The strobili (cone-line infructescences) of 'September Sun' are 11% shorter and 18% smaller in diameter than the mean for other genotypes of subsp. *oklahomensis*.

[00010] The inventors carried out the first asexual propagation of 'September Sun' in 2000 at Iowa State University in Ames, Iowa by rooting softwood cuttings of the original single plant. All of the resulting plants exhibited the typical characteristics of 'September Sun'. The inventors determined from successive generations of asexual propagation that the new variety 'September Sun' is stable and propagates true to type.

[00011] 'September Sun' is registered with the International Cultivar Registration Authority, Brooklyn Botanical Garden (international authority for unassigned woody ornamentals), 1000 Washington Avenue, Brooklyn, New York 11225-1099.

BRIEF SUMMARY

[00012] The following traits have been consistently observed, and represent the characteristics of the new variety 'September Sun.' These traits in combination distinguish this variety from naturally occurring genotypes of subspecies *oklahomensis* and from other commercially available varieties known to the inventors. 'September Sun' has not been tested under all possible conditions, and phenotypic differences may be observed with variation in environmental, climatic and cultural conditions.

[00013] 1. 'September Sun' is fast growing, with vertical growth of ≈ 89 cm (35 inches) per year over the first two years after establishment in the landscape (73% faster growth than the average genotype of subsp. *oklahomensis*). Canopy volume growth is extremely fast with an increase of ≈ 4.8 m³ (170 cubic feet) during the second year after establishment (234% faster growth than the average genotype of subsp. *oklahomensis*).

[00014] 2. The strobili (infructescences) of 'September Sun' are small and slender. They measure ≈ 17 mm long and 10.2 mm wide, with a length to width ratio of 1.7 (11% shorter and 18% smaller in diameter than the average).

[00015] 3. 'September Sun' is densely foliated (relative to the subsp.), with a foliage density rating of 10 (1= least dense; 10 is most dense); whereas the average density rating for other genotypes of subsp. *oklahomensis* is 7.

[00016] 4. 'September Sun' has a consistently symmetrical growth habit with a symmetry rating of 10 (1 = least symmetry, 10 = most symmetry) whereas the average symmetry rating for other genotypes of subsp. *oklahomensis* is 8.

[00017] ~~Seaside alder, specifically *Alnus maritima* (Marsh. Muhl. ex Nutt) is a relatively rare species in the North American environment that occurs as three disjunct subspecies separated one from another by a large geographic distances. In its native environment the plant appears as a thicket forming large shrub or as a small tree. The seaside alder occurs locally in wet soil or granite outcropping. The seaside alder is principally found locally in Johnston and Byron Counties of Oklahoma, in a region of northwest Georgia, and also locally in Southern Delaware and the Eastern shore of Maryland. It is a shrub that grows very well in water and along the edge of water bodies. Unlike other North American alders that form flowers in the spring, the seaside alder has a late bloom in later summer and early fall. The seaside alder also has characteristic dark green leaves that distinguish it from other alder species.~~

[00018] ~~There has been some successful propagation of the seaside alder by cuttings and seed. The plants taken from each of the three native locations of the plant show slight differences in growth rate and form. The seedlings and cuttings are currently grown in nurseries throughout the Midwest. Nursery grown seaside alder plants will generally grow in most temperate landscapes. Although the native stands of seaside alder seem to occur only in very wet locations, when planted as part of ornamental landscaping, the plants also do very well in cooler and dryer locations.~~

SUMMARY OF THE INVENTION

[00019] The present invention is summarized in a new variety of ornamental plant of the species *Alnus maritima* subsp. *oklahomensis*. The new variety is named 'September Sun' and is characterized by rapid growth and fall foliage color.

BRIEF DESCRIPTION OF THE DRAWINGS FIGURES

[00020] FIG. 1 is an illustration of the habit of the typical seaside alder 'September Sun' in an image showing several plants of the variety with similar habits.

[00021] FIG. 2 is an illustration of the fall foliage of the seaside alder 'September Sun' in an image showing several plants of the variety with similar fall foliage.

[00022] FIG. 3 is an enlarged view of the foliage and catkins of the seaside alder 'September Sun.'

BOTANICAL DESCRIPTION OF THE PLANT

[00023] The following is a description of the new variety, 'September Sun'. Data were collected from plants grown in outdoor conditions in field trials at Iowa State University, Ames, Iowa, and plants were approximately three years old at the time of data collection.

[00024] Detailed descriptions and a key for the subspecies of *Alnus maritima* are provided in Schrader and Graves (2002).

[00025] Botanical classification: *Alnus maritima* (Marsh.) Muhl. ex Nutt. subsp. *oklahomensis* Schrader & Graves 'September Sun'.

[00026] Commercial classification: Shrub or small tree for planting in the landscape.

[00027] Common names: Seaside Alder, Oklahoma Alder.

[00028] Use: Ornamental or windbreak plant for use in hedging or as a landscape specimen.

[00029] Parentage: Open-pollinated seed parent *Alnus maritima* subsp. *oklahomensis* growing on the bank of the Blue River near Tishomingo, Oklahoma (lat. 34°19'38"N, long. 96°35'25"W).

[00030] Plant description:

[00031] Bloom period -- early autumn.

[00032] Plant habit -- Upright large shrub with a broad-rounded crown.

[00033] Height -- 2.4 m (7.9 ft.) after three years; 7 m (23 ft.) at full size if unpruned.

[00034] Width -- 1.8 m (5.9 ft.) after three years; 6 m (20 ft.) at full size if unpruned.

[00035] Hardiness -- USDA Zones 4 through 9.

[00036] Propagation -- By softwood cuttings. Rooting is optimized with rooting compound.

[00037] Time to develop roots -- 6 to 9 weeks under intermittent mist.

[00038] Crop time -- From 6 to 8 months are needed to produce a plant large enough for landscape installation. Plants flower during second season in the landscape.

[00039] Pest and disease issues -- None of note.

[00040] Cultural requirements -- 'September Sun' is tolerant of partial shade and a wide range of soil types and conditions, but grows best in full sun and wet soils.

- [00041] Stem:
- [00042] Shape -- Cylindrical.
- [00043] Color -- Young stems light green becoming brown. Bark is brown when new, then turning light gray and becoming darker gray with age.
- [00044] Surface -- Bark smooth, becoming slightly rough with age, with lenticels near the base.
- [00045] Branching habit -- Strong axillary branching. Single trunk first season, multiple trunks thereafter.
- [00046] Foliage:
- [00047] Type -- Deciduous.
- [00048] Shape -- Blade ovate, elliptic or narrowly elliptic. Apex acute, sometimes acuminate.
- [00049] Size -- Blade 7.5 cm to 9 cm long, 3 cm to 4 cm wide. Petiole 13 mm to 21 mm long, 0.75 mm to 1.5 mm in diameter.
- [00050] Margin -- Serrate with single ascending teeth.
- [00051] Arrangement -- Alternate.
- [00052] Inflorescence:
- [00053] Staminate -- 1 to 6 catkins in racemose clusters at ends of current year's twigs. At anthesis, yellow and pendent, 2 cm to 8 cm long, 5 mm to 7 mm in diameter, on peduncles 4 mm to 18 mm long, 0.5 mm to 1 mm in diameter.
- [00054] Pistillate -- Solitary in axils of the first to fourth leaves from apex, on twigs bearing staminate catkins. At anthesis, erect, ovate to elliptic, 3 mm to 4.5 mm long, 1.5 mm to 2.5 mm in diameter, on peduncles 5 mm to 7 mm long, 1 mm to 2 mm in diameter.
- [00055] Anthesis -- Mid-August to mid-September.
- [00056] Infructescence:
- [00057] Type -- Cone-like strobili.
- [00058] Shape -- Ovoid or ellipsoid; length to width ratio of 1.7.
- [00059] Size -- \approx 17 mm long and 10.2 mm wide, on peduncles 5 mm to 10 mm long, 1 mm to 2 mm in diameter.
- [00060] Maturation -- One year after pollination. Fruit drop December to March. Strobili persist on plants 1 to 2 years after fruit drop.
- [00061] Fruits -- Light to dark brown, elliptic, 1 mm to 3 mm long, 1 to 2 mm wide, with wings narrow to absent and two persistent styles 0.4 mm to 0.8 mm long.

[00062] A herbarium specimen of 'September Sun' [18 May 2003, J. Schrader 123 (ISC)] is on deposit at the Ada Hayden Herbarium (ISC), Iowa State University, Ames, Iowa 50011. A photograph and herbarium specimen of 'September Sun' have been deposited at the Brooklyn Botanical Garden (international registration authority for unassigned woody ornamentals), 1000 Washington Avenue, Brooklyn, New York 11225-1099.

[00063] ——— The present invention relates to a new and distinct variety of seaside alder, *Alnus maritima* subsp. *oklahomensis*. The seaside alder named here 'September Sun' is characterized by rapid growth, particularly as compared to other plants of its species and subspecies and the development of more marketable ornamental strains as compared to other plants.

[00064] ——— 'September Sun' was selected from a trial of seaside alder plants as seedlings of *A. maritima* subsp. *oklahomensis* that were grown out on the campus of the Iowa State University at Ames, Iowa. Seeds were collected from a variety of open pollinated *A. maritima* shrubs and plants growing along the banks of the Blue River near Tishomingo, Oklahoma. Some of the seeds were cultivated into plants that were then scored and evaluated for selection for asexual propagation. The highest scored plant was then selected for asexual propagation as a variety and named "September Sun" in view of the time and color of its fall foliage. 'September Sun' has been asexually propagated with high rates of success by softwood cuttings using the methods described by Schrader and Graves HortScience 35:293-295 (2000). Ramets from the cuttings grow rapidly and can be two meters tall within two years.

[00065] ——— In general mature plants of 'September Sun' are large shrubs or small trees with multiple trunks that form broadly rounded upright canopies. Typically the plants grow to a size of seven meters in heights and five meters in width when not crowded by companion plants. As a genotype of *A. maritima* subsp. *oklahomensis* trunks of 'September Sun' support more leaves and axillary shoots than are found on plants of the other subspecies. This characteristic, when plants of this variety are planted close to each other, can lead to a dense canopy of glossy leaves that are darker in green than the leaves of all other North American alders known to the inventors. Unlike many other *A. maritima* plants which have been observed, leaves of 'September Sun' become mottled blends of yellow, orange, and rich brown under autumnal conditions in USDA Hardiness Zone 5a. *A. maritima*, as a species, is monoecious and is the only species of alder native to North America that blooms late in the growing season. Yellow pendulous catkins expand to eight centimeters in length and display staminate flowers from mid-August to late September. The catkins occurs in clusters of two

to six on tips of most branches, providing color in the landscape after flowering has ceased on most other trees and shrubs, and before leaf coloration begins during the autumn. Pistillate inflorescences are three to five millimeters in diameter and pink in color. The pistillate inflorescences occur on peduncles that arise from nodes immediately basipetal to the staminate inflorescences. The infructescences of 'September Sun' are medium to dark brown, cone-like strobile. Each of the infructescences is sixteen to twenty-two millimeters in length and eleven to fourteen millimeters in diameter. The strobili mature one year after pollination and persist on the branches through at least one more season, providing subtle ornamentation on the plant for appeal throughout the year.

[00066] The cultivar 'September Sun' differs from other known genotypes of its species as it is the fastest growing, most densely foliated, and most symmetrically shaped individual plants that have been observed in field trials including over one thousand plants of the subspecies conducted to date. During a trial that was conducted over three growing seasons at a site in Ames, Iowa, 'September Sun' grew larger and developed a more symmetrically canopy shape than did other seedlings of *A. maritima* subsp. *oklahomensis* in that trial, including half-siblings of the original 'September Sun' plant. Shown below in Table 1 is an illustration of the trunk and size characteristics of four representative plants of this subspecies grown in this trial.

TABLE 1

Genotype (m ³)	Trunk diam ^z (mm)	Canopy height ^y (cm)	Canopy volume ^x
'September Sun'	30.8 a ^w	238.9 a	6.17 a
'Blue River #6' (unpatented)	23.0 ab	166.3 b	2.35 b
'Pennington #5' (unpatented)	24.0 ab	155.1 b	1.72 bc
'Pennington #6' (unpatented)	19.9 b	142.1 b	1.16 c

^z Diameter of the largest trunk at 10 cm above the soil surface.

^y Distance from the soil surface to the apex of the tallest shoot.

^x Canopy volume was calculated by multiplying the shoot height by the horizontal canopy area (area of an ellipse calculated from the north-south and east-west canopy diameter measurements).

^w Means within each column followed by the same letter are not significantly different at $P \leq 0.05$ according Student's T-test. N = 1 for 'September Sun,' N = 8 for 'Blue River #6' and 'Pennington #5', N = 10 for 'Pennington #6'. Dunnett's test for comparing treatment groups

against a control (Stevens, 1990) was used to confirm differences between 'September Sun' and the three half-sibling groups.

[00067] To facilitate identification of the variety, the Macbeth-Munsell Disk Colorimeter was used to specifically identify colors of the important plant parts. The top side of the young leaf emerging from twigs is 5 GY 4/6. The lower side of the young leaf emerging from twigs is 5 GY 5/4. The top side of the mature leaf is 7.5 GY 2/4. The fall foliage is variegated, but the most predominant color is 7.5 Y 7/6. The Male inflorescence or flower cluster is 2.5 Y 7/6. The female inflorescence is 10 RP 4/12. The fully mature fruiting structure, or strobili, is 10 YR 2/1.

ABSTRACT OF THE DISCLOSURE

~~A novel variety of Seaside Alder, *Alnus maritima* has been identified and asexually propagated. The 'September Sun' Seaside Alder is a large shrub or small tree, that is characterized by being very fast growing, and densely foliated, with symmetrically shaped individual plants.~~ A new variety of *Alnus maritima* subsp. *oklahomensis* plant named 'September Sun' that is characterized by fast vertical growth of ≈ 89 cm (35 inches) per year over the first two years after establishment in the landscape and fast canopy volume growth of ≈ 4.8 m³ (170 cubic feet) during the second year after establishment. The strobili (infructescences) of 'September Sun' are small (17 mm long and 10.2 mm wide) and slender (length:width ratio = 1.7) compared to the average for *oklahomensis*. In combination, these traits set 'September Sun' apart from all other existing varieties of *Alnus maritima* subsp. *oklahomensis* known to the inventors.